

CLAIMS

I/WE CLAIM:

1. A wavemeter for a high repetition rate gas discharge laser having an output laser beam comprising a pulsed output of greater than or equal to 15 mJ per pulse, sub-nanometer bandwidth tuning range pulses having a femptometer bandwidth precision and tens of femptometers bandwidth accuracy range, for measuring bandwidth on a pulse to pulse basis at pulse repetition rates of 4000Hz and above, comprising:

an adjustable optic mounting containing an optic element having an assigned vertical optical plane in the wavemeter optical layout and comprising:

a mounting dowel pin positioned on a platform holding the components of the wavemeter;

a dowel receiving opening on the adjustable mirror mounting a tangent to which is in the assigned vertical optical plane.

2. A wavemeter for a high repetition rate gas discharge laser having an output laser beam comprising a pulsed output of greater than or equal to 15 mJ per pulse, sub-nanometer bandwidth tuning range pulses having a femptometer bandwidth precision and tens of femptometers bandwidth accuracy range, for measuring bandwidth on a pulse to pulse basis at pulse repetition rates of 4000Hz and above, comprising:

an adjustable optic mounting containing an optic element, the optic element having an assigned vertical optical plane in the wavemeter optical layout and comprising:

a tilt mechanism incorporated into the adjustable optic mounting enabling tilting the optic element about an axis in a plane parallel to a platform holding components of the wavemeter.

3. The apparatus of claim 1 further comprising:

a tilt mechanism incorporated into the adjustable optic mounting enabling tilting the optic element about an axis in a plane parallel to the platform.

adjustable mirror having two axes of adjustment

4. The apparatus of claim 2 further comprising:

a mounting dowel pin positioned on a platform holding the components of the wavemeter;

a dowel receiving opening on the adjustable mirror mounting a tangent to which is in the assigned vertical optical plane.

5. The apparatus of claim 1 further comprising:

an optic receiving recess indexed to the size of the optic element.

6. The apparatus of claim 2 further comprising:

an optic receiving recess indexed to the size of the optic element.

7. The apparatus of claim 3 further comprising:

an optic receiving recess indexed to the size of the optic element.

8. The apparatus of claim 4 further comprising:

an optic receiving recess indexed to the size of the optic element.

9. The apparatus of claim 1 further comprising:

the optic element is retained by at least one spring clip.

10. The apparatus of claim 2 further comprising:

the optic element is retained by at least one spring clip.

11. The apparatus of claim 3 further comprising:

the optic element is retained by at least one spring clip.

12. The apparatus of claim 4 further comprising:
the optic element is retained by at least one spring clip.
13. The apparatus of claim 5 further comprising:
the optic element is retained by at least one spring clip.
14. The apparatus of claim 6 further comprising:
the optic element is retained by at least one spring clip.
15. The apparatus of claim 7 further comprising:
the optic element is retained by at least one spring clip.
16. The apparatus of claim 8 further comprising:
the optic element is retained by at least one spring clip.
17. The apparatus of claim 9 further comprising:
the optic element is a flat rectangular mirror.
18. The apparatus of claim 10 further comprising:
the optic element is a flat rectangular mirror.
19. The apparatus of claim 11 further comprising:
the optic element is a flat rectangular mirror.
20. The apparatus of claim 12 further comprising:
the optic element is a flat rectangular mirror.
21. The apparatus of claim 13 further comprising:
the optic element is a flat rectangular mirror.
22. The apparatus of claim 14 further comprising:

the optic element is a flat rectangular mirror.

23. The apparatus of claim 15 further comprising:
the optic element is a flat rectangular mirror.

24. The apparatus of claim 16 further comprising:
the optic element is a flat rectangular mirror.

25. The apparatus of claim 9 further comprising:
the optic element is a circular optic.

26. The apparatus of claim 10 further comprising:
the optic element is a circular optic.

27. The apparatus of claim 11 further comprising:
the optic element is a circular optic.

28. The apparatus of claim 12 further comprising:
the optic element is a circular optic.

29. The apparatus of claim 13 further comprising:
the optic element is a circular optic.

30. The apparatus of claim 14 further comprising:
the optic element is a circular optic.

31. The apparatus of claim 15 further comprising:
the optic element is a circular optic.

32. The apparatus of claim 16 further comprising:
the optic element is a circular optic.

33. A wavemeter for a high repetition rate gas discharge laser having an output laser beam comprising a pulsed output of greater than or equal to 15 mJ per pulse, sub-nanometer bandwidth tuning range pulses having a femptometer bandwidth precision and tens of femptometers bandwidth accuracy range, for measuring bandwidth on a pulse to pulse basis at pulse repetition rates of 4000Hz and above, comprising:

- an optic mounting frame containing an optical diffusion element;

- a slit assembly containing a microslit adapted to selectively pass a slit of the optical output of the optical diffusion element to a succeeding optical element, moveably mounted to the optic mounting frame;

- a microslit position adjustment mechanism moving the slit assembly from a retracted position exposing the optic diffusion element for purposes of alignment to a down position with the slit aligned and moving the microslit into alignment.

34. The apparatus of claim 15 further comprising:

- a plurality of mounting balls interposed between the optic and a surface of the receiving recess each opposing engagement ball on one of the at least one spring clips.

35. The apparatus of claim 25 further comprising:

- a plurality of mounting balls interposed between the optic and a surface of the receiving recess each opposing engagement ball on one of the at least one spring clips.